

**STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION**

Illinois Commerce Commission)	
On its Own Motion)	
v.)	
The Peoples Gas Light and Coke Company)	
)	
Investigation of the cost, scope, schedule)	Docket No. 16-0376
and other issues related to the Peoples)	
Gas Light and Coke Company's natural)	
gas system modernization program and)	
the establishment of Program policies and)	
practices pursuant to Section 8-501 and)	
10-101 of the Public Utilities Act.)	

**DIRECT TESTIMONY ON RE-OPENING OF
SEBASTIAN COPPOLA
ON BEHALF OF
THE PEOPLE OF THE STATE OF ILLINOIS**

PUBLIC VERSION

AG Exhibit 4.0

June 14, 2017

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EXHIBIT LIST

AG Exhibit 4.1	WEC Energy Group Investor Presentation dated May 1, 2017
AG Exhibit 4.2	Kiefner & Associates Study – March 2007
AG Exhibit 4.3	PGL Response to Data Request AG 19.03
AG Exhibit 4.4	PGL Response to Data Request AG 21.15 (CONF)
AG Exhibit 4.5	PGL Response to Data Request AG 19.02
AG Exhibit 4.6	Customer Bill Calculation Assumptions

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Sebastian Coppola. My business address is 5928 Southgate Rd., Rochester, Michigan 48306.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am President of Corporate Analytics, Inc., a business consulting firm specializing in financial and strategic business issues in the fields of energy and utility regulation.

Q. ARE YOU THE SAME SEBASTIAN COPPOLA WHO FILED TESTIMONY IDENTIFIED AS AG EXHIBIT 2.0 IN THIS DOCKET ON OCTOBER 11, 2016?

A. Yes. I also filed a revised version labeled as AG Exhibit 2.0R on November 2, 2016.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. On March 1, 2017, the Illinois Commerce Commission (“the Commission” or “ICC”) issued an order directing additional hearings and requesting the parties to provide additional testimony and information to assist the Commission in deciding the propriety of the cost, scope, schedule, and other issues related to The Peoples Gas Light and Coke Company’s (“Peoples Gas,” “PGL,” or “Company”) natural gas system modernization program (“SMP”). In summary, the Commission directed the parties to provide testimony on:

1. Additional metrics to monitor the effectiveness and progress of the SMP;
2. Reasons for program cost increases and the optimal program spending level;
3. The Commission's authority to control the scope, capital spending and other matters under the Rider Qualified Infrastructure Plant ("QIP") statute;¹
4. How to balance risk factors with the Company's Neighborhood approach;
5. An analysis of the recommendations of the 2007 Kiefner & Associates, Inc. engineering study² (the "Kiefner Study") versus the Company's and the Attorney General's proposals;
6. The impact of the program completion date of various spending escalation scenarios;
7. The impact on the average annual residential customer bill from such escalations in spending; and
8. Other recommendations and questions raised in Staff's Report filed on July 22, 2016.

In my testimony I will address most of these matters, as well as respond to the testimony filed by Company witnesses Andrew Hesselbach and Gregg Therrien. Other witnesses providing testimony on behalf of the Attorney General will address other related matters.

Q. DO YOU HAVE ANY EXHIBITS SUPPORTING YOUR TESTIMONY?

A. Yes. I am sponsoring AG Exhibits 4.1 through 4.6.

Q. WHAT INFORMATION HAVE YOU RELIED UPON IN FORMULATING YOUR RECOMMENDATIONS?

¹ 220 ILCS 5/9-220.3.

² The Kiefner Study, delivered March 1, 2007, was commissioned by Peoples Gas as a condition of the Commission's final order in Docket No. 06-0540, which concerned the approval under Section 7-204 of the Act of a proposed acquisition of PGL's then-parent company. See Order, Docket No. 06-0540, February 7, 2007, Appendix A, at ¶ 23 (available at: <https://www.icc.illinois.gov/downloads/public/edocket/190846.pdf>).

41 A. I have relied on Peoples Gas's testimony, exhibits, and data request responses in the
42 portion of this proceeding following the ICC's March 1, 2017 order, which I refer to as
43 Phase 2 of ICC Docket No. 16-0376. I have also relied on testimony, exhibits, and data
44 request responses filed or provided by the Company and other parties in the preceding
45 phase of this docket, which I refer to as Phase 1. In addition, I have relied on information
46 gathered during the AMRP Workshops process conducted by the ICC Staff during the
47 first three months of 2016 and which is discussed in the May 31, 2016 and July 22, 2016
48 ICC Staff Reports to the Commission, including the Kiefner Study. I have further relied
49 on testimony, regulatory filings, and other information provided by PGL and the Joint
50 Applicants in ICC Docket No. 14-0496, as well as the proceedings in ICC Docket No.
51 15-0608 regarding the investigation concerning possible violations of Section 5-202.1³ of
52 the Public Utilities Act ("the Act").

53 I have also reviewed: (1) the Commission's orders in Peoples Gas's 2009, 2012 and 2014
54 rate cases;⁴ (2) Peoples Gas's and other parties' testimony in ICC Docket No. 09-0167
55 (Peoples Gas's 2009 rate case) – which is the case in which the Commission approved a
56 tariff rider permitting the assessment of monthly customer surcharges for the AMRP
57 investment and a 2030 AMRP completion date; (3) the transcript⁵ of the deliberations of
58 the Illinois House of Representatives in passing legislation in May 2013 authorizing the
59 establishment of the infrastructure replacement rider (PGL's Rider QIP); (4) Peoples
60 Gas's, Staff's, and Intervenors' testimony related to PGL's AMRP investment in its last

³ 220 ILCS 5/5-202.1.

⁴ Docket Nos. 09-0166/0167 (cons.), 12-0511/0512 (cons.), 14-0224/0225 (cons.).

⁵ AG Exhibit 2.3.

61 general rate case, ICC Docket Nos. 14-0224/0225 (cons.); and (5) Peoples Gas's
62 responses to Staff and Intervenors' data requests in that docket.

63 **SUMMARY CONCLUSIONS AND RECOMMENDATIONS**

64 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

65 **A.** My conclusions and recommendations are as follows:

- 66 1. Mr. Hesselbach has presented a Three-Year Capital Spending Plan that increases
67 the capital spending of \$250 million to \$280 million presented in Phase 1 of this
68 proceeding to more than \$300 million annually. His Three-Year Plan also seems to
69 renege on the agreement that the Company made in Phase 1 to exclude High
70 Pressure and Transmission facilities from the scope of what it calls its system
71 modernization program ("SMP").⁶
- 72 2. The \$300 million annual spending on SMP facilities further exacerbates the
73 burdensome impact of the program on the bill for the average residential heating
74 customer for many years to come.
- 75 3. The customer bill impact analysis presented by PGL is misleading and flawed. It
76 misrepresents the cumulative impact of the AMRP on customers' bills by averaging
77 the annual percent increases in the annual bill over the entire 30-year plus
78 timeframe needed to complete the project. The Company understated the amount
79 of capital expenditures that it included in its bill analysis. The capital spending
80 included in the bill impact calculations are about half of the amounts included in the
81 Three-Year Plan. Therefore, the bill impact calculations are inaccurate and not
82 credible.

⁶ See PGL Ex. 2.0 REV at 2:28 - 3:47.

- 83 4. Under the most likely cost scenario if PGL's Three-Year Plan capital spending
84 plans prevail, the annual amount for recovery of AMRP costs that will be included
85 in the average residential heating customer's bill will exceed \$202 in 2020 and will
86 peak at \$785 by 2040. The total AMRP-related cost billed to the average residential
87 heating customer over the life of the program will likely be in excess of \$22,000.⁷
- 88 5. The Commission should reject the Company Three-Year Capital Spending Plan as
89 excessive and unnecessary.
- 90 6. I have determined that with a more limited scope and a more moderate pace of main
91 replacement, full replacement of 8-inch and smaller vulnerable mains can be
92 achieved by 2050 and full replacement of the larger size cast iron and ductile iron
93 mains ("CI/DI") can be achieved by the year 2065 with a capital spending program
94 of \$130 million escalated at 3% annually. This replacement timeframe is in line
95 with the 2007 Kiefner Study and also consistent with the main replacement
96 programs of most of the Company's industry peers.
- 97 7. The lower capital spending program, while reducing risk and improving the safety
98 of the Company's gas system, will also moderate the impact on the bill of the
99 average residential heating customer. In comparison to the Company's projected
100 capital spending, the proposed lower capital spending program will reduce the bill
101 impact by 36% in the year 2020 and by nearly 50% in 10 years from now.
- 102 8. I conclude that the capital spending escalation scenarios requested by the
103 Commission further increase the negative impact on customer bills with no
104 commensurate benefit to the completion date of the AMRP. These spending
105 escalations go counter to the goal of minimizing the negative impact of the program
106 on customer bills and should not be adopted.
- 107 9. I conclude that the Commission should order an updated engineering study of the
108 remaining segments of cast iron and ductile iron pipe in the PGL system. It is not

⁷ Assumes SMP annual capital expenditures of approximately \$300 million in 2017 through 2020 and a 3% annual escalation after 2020.

109 prudent or advisable for the Commission to consider and approve a proposed \$300
110 million annual SMP capital spending program without an independent analysis of
111 the Company's vulnerable mains. It has been more than 10 years since an
112 engineering study of PGL's mains has been completed. I believe it is bad public
113 policy to move forward on a project that has been estimated to cost as much as
114 almost \$11 billion without an independent engineering study to define the
115 parameters of the program. Currently, the Commission, the Staff, the Attorney
116 General and other intervenors in this case are handicapped in properly assessing the
117 requirements of the main replacement program and relative timeframe for
118 completion of the AMRP without a more recent study. I recommend that the
119 Commission direct the Staff to engage an engineering firm and perform such a
120 study at earliest possible date.

121 10. I conclude that the metrics to monitor the performance of the AMRP proposed by
122 the Company are not sufficient to assess how effectively PGL is executing the
123 program. Simply monitoring quantities and cost is not an adequate performance
124 monitoring program. The Commission should direct the Company to expand the list
125 of metrics to include the metrics and information I have requested under the
126 Program Performance Metrics section of my testimony. These additional metrics
127 and information are critical to monitor how effective the AMRP is in achieving the
128 key goals of the program.

129 The remainder of my testimony provides further details and support to these summary
130 conclusions and recommendations.

SMP VS. AMRP

Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN THE SMP AND THE AMRP PROGRAMS.

A. In Phase 1 of this proceeding, the Company agreed with Staff's proposal that the SMP should be defined to include only those programs and capital expenditures previously included in the AMRP. Those capital programs are the (1) replacement of leak-prone cast iron and ductile iron ("CI/DI") pipe; (2) increasing system pressure from low to medium; and (3) relocation of meters from inside to outside customers' residences.⁸ The Company agreed with including only these sub-programs and renamed them the Neighborhood Replacement Program, the Public Improvement/System Improvement work ("PI/SI programs") and the Meter Relocation Program. In its previous definition of SMP, the Company had also included the High Pressure Installation Program and Transmission Upgrades.⁹

In his testimony in this second phase of the case, Mr. Hesselbach again confuses this definition by presenting a Three-Year SMP Plan that includes the High Pressure Installation Program and Transmission Upgrades. In PGL Ex. 5.3, the Company presents its Three-Year SMP Plan for 2018 to 2020 with approximately \$300 million of annual capital spending that includes from \$36 million to \$44 million annually for the High Pressure Installation Program ("HP") and Transmission Upgrades. Therefore, for purpose

⁸ PGL Ex. 2.0 REV at 2:28 - 3:47.

⁹ PGL Ex. 2.0 REV at 2.

of my testimony I will refer to this broader Three-Year plan with HP and Transmission Upgrades as the SMP, and the subset of capital expenditures for the Neighborhood Replacement Program, the PI/SI programs and the Meter Relocation Program as the AMRP.

Q. DO YOU HAVE ANY OTHER OBSERVATIONS ABOUT THE COMPANY'S CAPITAL SPENDING PROGRAM?

A. Yes. As large as the forecasted annual capital spending level presented in the Three-Year Plan is, it does not include other capital expenditures that the Company will likely make each year for other facilities. These expenditures may or may not qualify for recovery through the Rider QIP but would be included for recovery in base rates when the Company files a general rate case. In the Wisconsin Energy/Integrus merger approval case, Docket No. 14-0496, the Joint Applicants, who now control and manage PGL, identified approximately [BEGIN CONF] [REDACTED] [REDACTED] [END CONF] in the Three-Year SMP Plan.¹⁰

It is important to keep these additional expenditures in mind when considering the level that residential customer bills may reach in future years. Although the Company has focused its analysis of the impact on the average residential heating customer bill solely on the AMRP, the Commission needs to look at the broader issue of what the total gas bill will likely be in future years inclusive of all capital expenditures and components of the bill. After all,

¹⁰ ICC Docket 14-0496, JA Ex. 4.1 at 3.

169 customers pay bills that include all capital expenditures, not just those that are part of the
170 AMRP. Ignoring that fact in any bill impact analysis is deceptive.

171 Another observation that is also relevant is the Company's inclination to maximize capital
172 expenditures in order to grow earnings and dividend payments to its parent company. As I
173 stated in Phase 1 of this proceeding and bears repeating here, in presentations before
174 securities analysts and investors, WEC Energy Group, Inc. ("WEC") has projected earnings
175 per share annual growth rates of 5-7% beyond 2016.¹¹ The key driver of these long-term
176 earnings growth rates is \$9.5 - \$10.0 billion of projected capital expenditures during the
177 period 2017 to 2021, which will increase rate base. The largest portion of planned capital
178 expenditures would occur in WEC's natural gas business, of which PGL is a significant part.
179 In recent investors' presentations, there is no discussion of sales growth to spur further
180 earnings growth, only capital investments and rate base growth.¹² With little or no sales
181 growth, the increase in rate base must be recovered from the same customer base through
182 commensurately higher rates.

183 To feed this desire for earnings growth, there is likely considerable pressure on PGL to
184 spend the highest amount possible on the SMP, recover the costs and returns from those
185 investments through surcharges in Rider QIP, and later roll in those capital expenditures to
186 grow rate base. In fact, shareholders have been well rewarded from the merger and
187 continued growth in rate base with a total return on their stock investment, including

¹¹ See AG Exhibit 2.0R at 31:508 - 32:520; AG Exhibit 2.4.

¹² See, e.g., WEC Energy Group Investor Presentation dated May 1, 2017, attached as AG Exhibit 4.1, also available at: <https://www.sec.gov/Archives/edgar/data/783325/000010781517000161/a2017mayinvestorfinal.htm> and https://www.wecenergygroup.com/invest/investor_presentation_may2017.pdf.

dividends, in excess of 50% for the period of January 1, 2014 to June 9, 2017. The Commission needs to be mindful of the fact that PGL's parent company's admitted desire to increase capital spending to boost investor returns may result in capital expenditures greater than those absolutely necessary to maintain a safe gas distribution system.

NEIGHBORHOOD APPROACH VS. PIPE SEGMENTS

Q. PLEASE DESCRIBE THE DIFFERENCES BETWEEN THE COMPANY'S APPROACH TO REPLACE AT-RISK PIPE THROUGH A NEIGHBORHOOD APPROACH VERSUS THE ATTORNEY GENERAL'S PROPOSAL TO REPLACE THE MOST AT-RISK PIPE SEGMENTS FIRST.

A. As discussed in his testimony in Phase 1 of this proceeding, Attorney General expert witness Allen Neale recommended that the Company should focus its accelerated infrastructure replacement program on replacing the riskiest or worst leak-prone pipe segments first.¹³ This methodology would be consistent with the risk reduction goals of the Distribution Integrity Management Program ("DIMP") mandated by the Pipeline and Hazardous Materials Safety Administration ("PHMSA") of the United States Department of Transportation. He also stated that reconfiguring the main replacement program to focus more resources on the worst-performing segments first would more effectively achieve the goal of system risk reduction. The goal could be achievable with lower annual costs than the Company's proposed SMP. According to Mr. Neale, continuing to follow PGL's

¹³ See AG Ex. 1.0R.

existing “neighborhood approach” will not properly prioritize ridding the system of the riskiest or worst pipe segments.¹⁴

The Company continues to believe that the neighborhood approach is the most cost effective and less disruptive approach to replace the most vulnerable segments of cast iron and ductile iron pipes in its system. PGL first points out the higher cost of performing PI/SI work, which is focused on selective segments, versus the lower cost of replacing pipe in a more coordinated and planned manner under the neighborhood program. Second, the Company points out that it is more disruptive to the community to have repeating construction work in the same neighborhood if only selective segments are replaced instead of replacing the entire system of CI/DI mains and services at the same time. Third, PGL has stated that it can only upgrade gas service to medium pressure from low pressure if all the vulnerable pipes in the entire neighborhood have been replaced. This increase in pressure would not be possible if only select segments are replaced.

Q. HAS PGL ALWAYS FOLLOWED A NEIGHBORHOOD APPROACH?

A. No. It appears that prior to the start of the AMRP in 2011, the Company used a segment replacement strategy. In testimony in ICC Docket No. 09-0167, Company witness Salvatore Marano introduced the concept of a zonal approach to replacing CI/DI mains and services.¹⁵ This concept later morphed into the Neighborhood Pipe Replacement approach.

¹⁴ AG Ex. 1.0R at 3.

¹⁵ ICC Docket No. 09-0167, Peoples Gas Ex. SDM-1.0 REV at 59:1075.

Until 2011, PGL did not seem to be concerned with the factors that it now claims are important in shifting from a segment approach to a neighborhood approach. Perhaps, the increased scale of the AMRP has made this change necessary. It is informative to note that the Kiefner Study validated the Company's previous segment approach by pointing out:

The methods used by PGL to select segments for replacement consist of:

- **Main Ranking Index (MRI) score of 6 or higher**
- **Coordination with city-wide infrastructure modifications**
- **Selection typically based on planned upgrading work**

These methods appear to be working well. The MRI scoring model has effectively prioritized the worst pipe segments for replacement as evidenced by the declining rates of breaks and cracks since its inception in 1993. The MRI scoring model also reveals that the majority of the pipe that remains in the system is performing reasonably well. Seventy percent of the remaining segments have MRI scores less than 1 and ninety percent have MRI scores less than 3.¹⁶ [Emphasis added]

A copy of the Kiefner Study is included in AG Exhibit 4.2.

Q. DO PEER COMPANIES GENERALLY FOLLOW A SEGMENT APPROACH?

A. Yes. As shown on page 2 of PGL Exhibit 6.2, three of the peer companies reviewed by Mr. Therrien use a segment approach, with a fourth peer company using a combination of replacing select segments and occasionally replacing entire neighborhoods. Based on my experience with two other gas utilities, Consumers Energy Company and DTE Gas Company located in Michigan, and my general knowledge of the gas industry, replacement of high risk segments is the typical approach used by most other utilities.

Q. WHAT IS YOUR CONCLUSION?

¹⁶ March 2007 Kiefner Study at 1.

A. Mr. Neale's testimony in Phase 1 and his testimony in Phase 2 of this case recommend that a targeted replacement of the most at-risk pipe segments is the most effective way to reduce the risk of catastrophic events and increase the safety of the PGL gas system.

However, if the Commission is convinced that the Neighborhood Approach is a better approach to proceed with the replacement of vulnerable mains and services, then it should be mindful to not adopt by default the Company's Three-Year Plan but resolve the following questions in order to properly size the program:

1. What should be the scope of the AMRP?
2. Is there a more optimal pace for replacement of pipe and related facilities that will better balance the removal of at-risk pipe and the impact on customer bills? In other words, why not reduce the number of neighborhoods planned for each year if the most dangerous pipes are already replaced through the System Improvement program?
3. Does a lower pace of replacement still result in a reasonable target end date for replacement of various sizes of CI/DI pipe?

The Commission's decisions on these items will drive the size of the gas bill to the average residential heating customer for years to come.

SCOPE, PACE AND TARGET END DATES

Q. PLEASE DEFINE THE PROPER SCOPE OF THE AMRP.

A. As I discussed above, the Company's Three-Year Plan is a much broader program than replacing at-risk CI/DI mains and services, and relocating meters from inside to the outside of the building. The proper scope of the AMRP program should be as the Company agreed

to in Phase 1 of this case. In Table A below, I have separated the forecasted capital spending in the Three-Year Plan between the AMRP and the other programs.

Table A			
3-Year Plan SMP Forecasted Capital Expenditures			
SMP vs. AMRP			
\$Millions	Total SMP	AMRP	HP & Transmiss.
Year - 2017	\$ 301.5	\$ 233.4	\$ 68.1
Year - 2018	\$ 300.0	\$ 260.0	\$ 40.0
Year - 2019	\$ 305.0	\$ 261.5	\$ 43.5
Year -2020	\$ 304.0	\$ 268.3	\$ 35.7
Source: PGL Ex. 5.3.			

As shown in this table, the Company is still projecting a high level of spending in excess of \$260 million on the AMRP in each year 2018 to 2020. This represents a significant ramp up in spending from prior years. In 2017, the company is projecting capital spending on the AMRP of \$231 million, which follows \$192 million of capital expenditures in 2016. In my testimony below, I discuss how this level of capital expenditures can be reduced by moderating the pace of the program and still achieve a reasonable completion date.

Q. PLEASE DISCUSS HOW THE PACE OF THE AMRP CAN BE MODERATED TO REDUCE THE IMPACT ON CUSTOMER BILLS AND STILL REPLACE THE VULNERABLE PIPES WITHIN A SAFE AND REASONABLE TIMEFRAME.

284 A. First of all, the Commission needs to be aware that PGL is already removing the most
285 dangerous segments of CI/DI mains and services outside of the Neighborhood Program on
286 an expedited basis. Through the System Improvement program, the Company replaces
287 those pipes with Class 1 and 2 Leak designations within approximately 12 months of when
288 leaks occur. PGL also replaces CI/DI pipes with a Uniform Main Ranking Index
289 (“UMRI”) score of 6 or higher and a score of 5 in high-consequence areas (*i.e.* schools and
290 hospitals) within 12 months from determination of such high-risk situations.

291 In addition, the Company replaces at-risk CI/DI mains and services, and relocates meters
292 outside of the planned Neighborhood approach through the Public Improvement program
293 as the City of Chicago and other utilities undertake infrastructure upgrades in those areas
294 where the Company still has vulnerable pipes.

295 As shown in PGL Ex. 5.3, on an annual basis from 2017 to 2020, the Company expects to
296 replace between 15 to 17 miles of CI/DI mains, 1,500 to 2,100 services and relocate
297 between 3,000 to 3,380 meters by incurring between \$32 million to \$36 million in capital
298 spending for Public Improvement and System Improvement programs.

299 **Q. ARE THESE EXPENDITURES PART OF THE CAPITAL SPENDING**
300 **DEDICATED TO THE PRE-PLANNED NEIGHBORHOOD PROGRAM?**

301 A. No. The Company’s Three-Year Plan shows that the pre-planned Neighborhood Program
302 will replace and install on an annual basis an additional 86 to 113 miles of mains, replace
303 7,845 to 11,070 services and relocate 14,275 to 19,850 meters at an annual projected
304 capital spending of between \$178 million to \$216 million. Additionally, the Three-Year

Plan shows a separate “Meters” relocation category of capital expenditure, outside the Neighborhood Program and PI/SI program, with planned spending of \$19 million to \$20 million each year.¹⁷

Therefore, in total, PGL has projected annual capital spending on the AMRP Program, inclusive of the System Improvement program, the Public Improvement program, and relocation of meters of between \$233 million to \$268 million in the years 2017 to 2020. The AMRP projections, as presented by the Company in its Three-Year plan, would allow PGL to replace/install a total of 100 to 130 miles of vulnerable mains, replace 10,000 to 12,570 vulnerable services, and relocate 17,778 to 21,100 meters per year.

Q. HAVE PEER COMPANIES UNDERTAKEN AS LARGE A MAIN AND SERVICES REPLACEMENT PROGRAM AS PGL?

A. No. As shown on page 2 of PGL Exhibit 6.2, the Company has undertaken a far more aggressive main replacement program than the five utilities PGL has identified as its peers. For example in 2014, PGL replaced 183.2 miles of CI/DI mains when the next highest peer company, Consolidated Edison Company of New York (“ConEd”), replaced 50.9 miles. Other peer utilities replaced only 12.5 to 28.1 miles in that year. In the subsequent two years, 2015 and 2016, the numbers vary but peer companies are still below PGL in the pace of replacement of vulnerable pipes. Although Mr. Therrien did not provide data on vulnerable services for the peer companies, I am confident there is a similar disproportionate difference in the pace of replacement between PGL and its peers given

¹⁷ PGL Ex. 5.3.

325 that the number of services replaced generally follow the same proportion to miles of main
326 replaced.

327 From the information presented by Mr. Therrien in PGL Ex. 6.2, it is also important to note
328 that the highest capital spending by the peer utilities was \$154 million by ConEd in 2016.
329 This contrasts with the \$190 million to \$287 million annual spending by PGL in the three
330 years 2014-2016 as shown in the exhibit. Excluding Washington Gas Light Company
331 (“WGL”) from this comparison because of its relatively small program, the other peer
332 utilities, Keyspan Energy Delivery New York (“KEDNY”), Baltimore Gas and Electric
333 Company (“BG&E”), and Philadelphia Gas Works (“PGW”) had annual capital spending
334 of between \$35 million to \$87 million despite having similar (and in some cases, even
335 more) miles of risky mains and services yet to replace. Specifically, page 1 of PGL Ex. 6.2
336 shows that ConEd has still 2,143 miles of at-risk mains to replace, KEDNY 1,880 miles,
337 BG&E 1,279 miles and PGW 2,063 miles. In comparison, the exhibit shows that PGL has
338 1,526 miles. This number does not seem to be correct given that the Company elsewhere
339 reported a total of 1,912 miles of at-risk main to be replaced in this proceeding.¹⁸ The
340 number of at-risk services for PGL shown in PGL Ex. 6.2 also seems in error. The
341 Company has considerably more than 17,618 at-risk services. This is closer to the number
342 that the Company replaces on an annual basis. In any case, as corrected, the number of
343 mains to be replaced is very comparable among the major main replacement programs of
344 the peer companies. Yet, PGL has undertaken a more accelerated pace of replacement and
345 higher annual capital spending than its peers.

¹⁸ PGL response to data request AG 21.15, Attach 01 CONF. (The Company has agreed that the 1,912 miles figure may be treated as not confidential.)

Another informative statistic is the at-risk mains that need replacing as a percent of the total system mains. According to the Company's response to data request AG 19.03, which is included in AG Ex. 4.3, the Company has the second lowest percentage among its peers of at-risk mains needing replacing at 33.6%. BG&E is at 16.9%, and the others range from 41.0% to 66.8%. Although the 33.6% may be a bit understated when using the correct number of mains yet to be replaced by PGL, this comparison shows that the Company is not an outlier in terms of miles of at-risk main to be replaced. There simply is no justification to adopt the pace of accelerated main replacement that PGL proposes.

Q. DID YOU DETERMINE HOW MUCH ON A PER-CUSTOMER BASIS PEER COMPANIES ARE SPENDING ON THEIR PIPE REPLACEMENT PROGRAMS?

A. Yes. Using the information provided in PGL Ex. 6.2, the highest amount of capital spending per customer was by WGL at \$186 in 2015. For the other peer companies, the highest amount in any of the three years ranged from \$56 to \$140. The average of the highest capital spending per year by the five peer companies was \$118 per customer. In comparison, PGL spent \$339 per customer in 2014. These numbers were derived by simply dividing the Main Replacement Costs for each utility on page 2 of the exhibit for each year by the number of gas customers on page 1 and selecting the highest expenditure per customer in any year.

It is clear that PGL has undertaken a per-customer capital spending program for the AMRP that is 1.8 times higher than the peer utility with the highest capital spending in any one year and 2.87 times higher than the average of its peers' highest capital spending in any one

year. This higher level of spending by PGL has a much more significant negative impact on residential customer bills than experienced by customers of its peers for replacement of vulnerable pipes.

Q. DID YOU DETERMINE WHAT LEVEL OF CAPITAL SPENDING WOULD BE JUSTIFIED FROM THE COMPARABLE SPENDING LEVEL PER CUSTOMER UNDERTAKEN BY PEER COMPANIES?

A. Yes. At the average level of spending of \$118 per customer by the peer group, PGL could justify a current annual capital spending level of approximately \$100 million.¹⁹ Assuming even the highest spending per customer of \$186 by any of its peers in the past three years, the highest comparable spending level that PGL could justify based on peer-company data is \$157 million.²⁰ These levels are quite a contrast to the Company's spending levels in excess of \$260 million projected in the Three-Year Plan.

If we take the midpoint of the average and maximum comparable spending levels of the peer group, the Company can only justify a current capital spending program of approximately \$130 million.²¹ This amount is the same capital spending program I recommended in Phase 1 of this case. A more moderate level of capital spending still makes sense if properly escalated at 3% per year to take into consideration inflationary cost pressure in future years of the program. Such a level of capital spending represents approximately 50% of what the Company has projected to spend annually on the AMRP

¹⁹ (845,475 customers x \$118 = \$99.8 million)

²⁰ (845,475 customers x \$186 = \$157.3 million)

²¹ This is the average of \$100 million and \$157 million, or \$128.5 million, rounded up to \$130 million..

from 2018 to 2020 and is 33% lower than the \$192 million that the Company spent in 2016.²²

Q. PLEASE EXPLAIN HOW THE LOWER CAPITAL SPENDING PROGRAM YOU PROPOSE WOULD IMPACT THE NUMBER OF MILES, SERVICES AND METERS THAT WOULD BE REPLACED OR INSTALLED EACH YEAR?

A. Generally speaking, with a capital spending level of \$130 million, the entire AMRP capital spending and replacement rate would be cut in half from the levels proposed by the Company in its Three-Year Plan. In the Three-Year Plan, PGL has projected to retire between 83 to 86 miles of main on annual basis and replace those mains with 129 to 132 miles of new main. Therefore, a more moderate replacement program of half that rate could retire/replace approximately between 40 to 50 miles of main each year. This rate of main replacement would include the replacement of the most dangerous mains through the System Improvement program and the replacement requirements from the Public Improvement projects. It would also provide adequate capacity to implement a scaled-down version of the Neighborhood Program or, alternatively, a segment replacement program, depending on which approach the Commission directs.

In response to data request AG 21.15, Attach 01 CONF, which is attached as AG Ex. 4.4 CONF, the Company reported that it has 1,912 miles of CI/DI mains still to replace. Of this total, approximately 900 miles are for mains of 8 inch or smaller in size. These smaller main sizes are more prone to cracks and breaks, and pose the highest safety threat.

²² PGL response to data request AG 18.01, Attach 01.

406 Assuming the Company properly prioritizes its neighborhoods or segments to remove these
407 higher risk situations first, together with the PI/SI programs, it needs to only replace about
408 27 miles of 8-inch and smaller mains per year in order to replace the entire 900 miles
409 between 2017 and 2050. At a total annual rate of replacement of 50 miles of main, this still
410 leaves 23 miles of larger size mains to be replaced each year from 2017 to 2050 and 50
411 miles per year after the year 2050. This replacement rate would allow the 1,012 miles of
412 these larger-diameter mains to be fully replaced by the year 2055.

413 On the other hand, assuming a total lower rate of replacement of 40 miles of mains per year
414 and still replacing the 27 miles of 8-inch and smaller diameter mains between 2017 and
415 2050, this leaves 13 miles for larger size mains that can be replaced until 2050 and 40 miles
416 after 2050. Such a replacement rate would completely replace the larger size mains by the
417 year 2065.

418 Table B below shows the calculations to arrive at the AMRP program end dates.

Table B					
Main Replacement Rates and Target Completion Dates					
@ \$130 Million Capital Spending ¹					
	Total Main Miles	Mains 8" or less	Other Mains		
			Total	Up to 2050	After 2050
Scenario 1:					
Total Miles ²	1912	900	1012	759	253
Total Annual Main Replacement	50	27		23	50
Years to Completion		33	38	33	5.06
Current Year		2017	2017		
Target Completion Date		2050	2055		
@ \$130 Million Capital Spending ¹					
Scenario 2:					
Total Miles ²	1912	900	1012	429	583
Total Annual Main Replacement	40	27		13	40
Years to Completion		33	48	33	15
Current Year		2017	2017		
Target Completion Date		2050	2065		
@ \$157 Million Capital Spending ¹					
Scenario 3:					
Total Miles ²	1912	900	1012	1012	0
Total Annual Main Replacement	60	27		33	60
Years to Completion		33	33	33	0
Current Year		2017	2017		
Target Completion Date		2050	2050		
¹ Escalated at 3% annually.					
² PGL response to data request AG 21.15 Attach CONF.					

419

420

421

If the Company is able to achieve the projected cost savings that it presented in the New Management Target Case scenario in testimony in Phase 1, then there could be room to

accomplish a higher rate of main replacement and complete the program sooner. I will discuss the New Management Target Case assumptions further below on page 33.

Also, if the Commission finds that the \$130 million capital spending escalated at 3% is too limiting, it could adopt the higher range of peer-group comparable spending of \$157 million discussed above with a similar escalation rate. As show in Table B, this faster pace of replacement of 60 miles of main per year would allow PGL to achieve an earlier completion date of 2050 for replacement of all CI/DI pipe, while still moderating the impact on customer bills from the Company's proposed spending levels.

Q. HOW WOULD THE COMPANY BE ABLE TO IMPLEMENT SUCH A SCALED-DOWN PIPE REPLACEMENT PROGRAM WITHIN THE NEIGHBORHOOD APPROACH?

A. According to the Company's Three-Year Plan in PGL Ex. 5.3, PI/SI projects entail the retirement/replacement of approximately 13 to 16 miles of CI/DI mains each year. This leaves between 27 and 37 miles of Neighborhood Program main that could be replaced each year. The Three-Year Plan shows that the Company is targeting to replace mains, services and meters in 5 to 10 neighborhoods each year, with some of these neighborhoods carrying over from one year to the next.

As a result of having a scaled-down spending level and in line with my discussion above, the Company would schedule fewer neighborhoods each year within the limits of its lower capital budget.

**Q. HOW DO THE PACE OF THE AMRP YOU HAVE PROPOSED AND THE
RELATED COMPLETION DATES COMPARE TO THE 2007 KIEFNER STUDY?**

A. On pages 17 through 19 of the March 2007 Study Report, Kiefner presents a projected
completion table by main size and summarizes its conclusions as follows:

Based on the findings that CI and DI mains are being replaced at a consistent rate that could meet one of several possible completion dates and that the MRI approach appears to adequately single out the problematic segments in terms of breaks and cracks, it is reasonable to conclude that the current Cast and Ductile Iron Replacement Program criteria and methodology are working effectively. The trend in cracks, breaks and leaks is downward, and progress is occurring at a rate sufficient to enable the operator to have all cast iron mains of sizes 12-inch and smaller replaced by 2050. Because of the track record for the larger-size pipes (16-inch through 48-inch) has been good in terms of there being few breaks, cracks, or leaks associated with those sizes, one can say that extending the completion dates for the larger sizes would not significantly compromise the safety and reliability of the system.... Accordingly, we recommend the following:

- PGL should continue to employ the present MRI threshold score of 6 as one of their criteria for selecting segments for replacement. The declining rates of occurrences of breaks and cracks show that this is an effective criterion.**
- Replacement of all segments of 4-inch, 6-inch, and 8-inch pipe should be completed by 2036 as these sizes of pipes have accounted for 90 percent of the instances of breakage and cracking.**
- Replacement of all segments of 10-inch and 12-inch pipe should be completed by 2050.**
- Replacement of all segments of 16-inch and larger pipe should be completed by 2080.**

We also recommend that the rate of replacement for each size to meet these goals be kept relatively constant until the amounts remaining are below 10 percent of the original mileage.²³

According to the report, PGL was replacing approximately 57 miles of main each year from 1981 to 2006 and making significant progress to replace at-risk pipe and improving the safety of its gas system. This level of replacement compares favorably with the

²³ March 2007 Kiefner Study at 18-19.

476 accelerated main replacement programs of its peer group, all of which, on average, replaced
477 less than 55 miles of main annually in the past three years.²⁴

478 Although in 2007, Kiefner had recommended that CI/DI mains of 8-inch or less be replaced
479 by 2036, this is an extension of the historical trend as applied in Table 4 on page 17 of the
480 report. Given the work completed from 2007 to 2010, the acceleration of the AMRP from
481 2011 to 2016, and the Company's report that leaks continue to decline, the extension to
482 complete replacement of these pipe sizes to 2050 is a reasonable plan. On the other hand,
483 the plan I have outlined above to replace the larger size pipes by 2065, at the latest, is 15
484 years earlier than what Kiefner had recommended.

485 On the whole, the capital spending budget of \$130 million for the AMRP and the related
486 pipe replacement rates I have outlined above are more in line with the Kiefner Study report
487 than the Company's target completion date of 2035 to 2040.

488 The complete 2007 Kiefner Study (included as AG Exhibit 4.2) provides helpful insight
489 that the larger capital spending program proposed by the Company is not necessary to
490 achieve a safer gas distribution system within a reasonable timeframe.

491 **Q. SHOULD THE COMMISSION STILL REQUIRE THAT A NEW ENGINEERING**
492 **STUDY BE PERFORMED OF THE PGL MAIN AND SERVICE LINE**
493 **REPLACEMENT PROGRAM AS AN UPDATE TO THE 2007 KIEFNER STUDY?**

²⁴ PGL Ex. 6.2 page 2.

494 A. Yes. The Commission, Staff, the Attorney General, and other intervenors are currently
495 handicapped without a more current engineering study of PGL's CI/DI main and service
496 line replacement program and the impact on the safety level of the Company's gas
497 distribution system. It would not be prudent for the Commission to approve a \$300 million
498 annual capital spending program, as proposed in the Company's Three-Year SMP Plan,
499 without a more recent independent engineering analysis of the Company's vulnerable gas
500 lines. The Commission should not repeat the error made in 2009 when it approved an
501 acceleration of the main replacement program without an underlying independent
502 engineering study that justified the acceleration. As we all know, what appeared to be a
503 manageable program to be completed by 2030 at a cost of \$2.6 billion has now
504 mushroomed to as much as \$10 billion or more if the Company is not able to rein in
505 historical cost trends.

506 The Company's view that a new engineering study is premature or disruptive is not
507 convincing.²⁵ The Kiefner Study was completed 10 years ago. A considerable timeframe
508 has passed since that study and many new events have occurred, including large segments
509 of pipe that have been replaced, a longer history of pipe cracks and breaks, serious cost
510 overruns, a discredited management team, and a new management team with an aggressive
511 disposition for capital spending. These and other events more than justify a new and
512 immediate engineering study.

513 Therefore, I recommend that the Commission direct its Staff to engage a competent
514 engineering firm of the caliber of Kiefner & Associates or Zinder Engineering, Inc. to

²⁵ PGL Ex. 5.0 at 20:369-375; *see also* PGL response to data request AG 23.01(b).

perform an in-depth study of the technical state of the remaining CI/DI mains and services in the PGL gas system. The engineering firm should be tasked with the responsibility to make an assessment of a reasonable replacement rate for various pipe sizes, along with recommended completion dates that do not unnecessarily compromise the safety of the system. Like the audit recently conducted by The Liberty Consulting Group,²⁶ the new engineering study should be paid for by PGL but run independently by Staff.

FACTORS CONTRIBUTING TO AMRP COST INCREASES

Q. DO YOU HAVE ANY OBSERVATIONS ON THE CAUSES OF THE DRAMATIC ESCALATION IN THE TOTAL COST OF THE AMRP?

A. Yes. In his testimony in PGL Exhibit 5.0, Mr. Hesselbach attributes the increase in the overall cost of the AMRP from the \$2.6 billion projected in 2009 to the \$10 billion projected now by Burns & McDonnell Engineering Company, Inc. (“Burns & McDonnell”) under the Pre-Acquisition Path scenarios to a lack of real-world data by the previous forecasters, a more limited original scope of the program, and more PI/SI work, which is more expensive.²⁷ Although all of these may be contributing factors, Mr. Hesselbach fails to acknowledge that the sheer size of the AMRP has overwhelmed the management of PGL, its resources, talent, and capabilities. The large size of the undertaking and the complexity of working in a confined urban environment with high concentration of residential buildings, commercial operations, and heavy vehicle traffic created multiple

²⁶ The Liberty Consulting Group was engaged to complete an audit of Peoples Gas’s AMRP, pursuant to the Commission’s final order in Docket Nos. 12-0511/0512 (cons.) (June 18, 2013).

²⁷ PGL Ex. 5.0 at 42.

534 challenges and cost inefficiencies. The problematic coordination of permits with the City
535 of Chicago Department of Transportation (“CDOT”) and frequently changing pavement
536 restoration rules by CDOT were also contributing factors in causing dramatic cost overruns
537 for the program that have not yet been fully dissected.

538 All these complexities, challenges and problems have not gone away. Although the new
539 management team may have cured some of them and added more talent to better manage
540 the AMRP, there is still a significant risk that costs overruns can occur given that the scale
541 of the program is not being throttled back, but instead would be accelerated in the next
542 three years if the Commission adopts PGL’s proposal. Indeed, the December 2016 Month-
543 End Report shows that, despite the best hopes of the new management, PGL exceeded
544 budgeted expectations in per-unit cost for 2016 construction activities in the Neighborhood
545 Program with \$1.31M/mile for main installment against \$1.22M/mile expected,
546 \$0.08M/mile for main retirement against \$0.05M/mile expected, and \$4,479/service pipe
547 for service installation against \$2,968/service pipe expected.²⁸

548 In his testimony, Mr. Hesselbach states that in 2016 and 2017 the Company moderated
549 spending on the AMRP in order for the management team to gain its bearings and train or
550 adjust its resources for a full scale program in future years.²⁹ Although this was a wise
551 step, a resumption of a more aggressive capital spending program, with more
552 neighborhoods, miles of pipe, services, and meters to be replaced in future years, could
553 easily revert back to the same dramatic cost-escalation scenario that existed in prior years.

²⁸ PGL December 2016 Month-End Report, January 31, 2017, at 3 (available at:
<https://www.icc.illinois.gov/downloads/public/edocket/441225.pdf>).

²⁹ PGL Ex. 5.0 at 39:767 - 40:782.

A more moderate, scaled-down, replacement program would avoid such a risk of cost overruns and would be more manageable for both the Company and the City.

SPENDING ESCALATION SCENARIOS

Q. PLEASE DISCUSS THE CAPITAL SPENDING ESCALATION SCENARIOS INCLUDED IN THE COMMISSION ORDER.

A. In its March 1, 2017 order, the Commission directed the parties to the case to calculate the impact on the average residential customer annual bill and on the program duration period by applying four capital spending escalation scenarios to the Company's and the Attorney General's AMRP proposals. The four escalation scenarios were 1.5%, 2.0%, 2.5% and 3.5% annually.

It is not clear from the order what the Commission's real intent was in requesting these alternative analyses. Such an acceleration in spending is not being proposed by either the Company or the Attorney General. In Phase 1 of these proceedings, I proposed a capital budget for the AMRP of \$130 million with a 3% annual escalation to cover future inflationary pressures that the Company would likely face in labor and material costs. That escalation factor was not meant to further accelerate spending but allow a consistent level of replacement work on a current-cost basis.

Nevertheless, the Company complied with the Commission directive and presented its calculations of the average bill impact and the reduction in the program completion date under each scenario against the Base Case. PGL Ex. 5.4 presents this information. The

escalated spending scenarios decrease the completion date of the program between four to seven years, but also increase the impact on the residential customer bill.

Q. DO YOU AGREE WITH THE IMPACT OF THE SMP/AMRP ON THE AVERAGE RESIDENTIAL CUSTOMER BILL CALCULATED BY PGL AND SHOWN IN PGL EX. 5.4?

A. No. The presentation is misleading and the calculations also have a major flaw. As I discussed in my testimony regarding Peoples Gas's rate impact analysis in Phase 1, Mr. Hesselbach's testimony and exhibit on this point are misleading and not terribly helpful because they do not consider the cumulative impact of spending on the program over the next 20 to 30 years.³⁰ Both his testimony and the related exhibit³¹ provide what could be interpreted as a rather moderate average increase in residential heating customer bills of \$1.75 to \$2.32 per month and \$21.00 to \$27.80 per year. The testimony and exhibit also imply a relatively innocuous average annual increase of 1.7% to 2.2% depending on the timeframe presented.

In calculating the cost impact, as it did in Phase 1 of this case, PGL took the approach of averaging the annual percent impact of the AMRP costs on customer bills over the entire term of the program for the Base Case and each of the alternative spending scenarios. This approach averages the low cost in the early years of the program with the higher cost in the later years as the program costs continue to accumulate. If this were a one-year or

³⁰ AG Ex. 2.0R at 5:83-91, 23:375-394.

³¹ PGL Ex. 5.4.

short-term project with a one-time capital expenditure, then such calculations and presentation would make sense.

However, with a long-term program lasting multiple decades, the numbers presented by PGL do not tell the whole story and seriously understate the real impact on customer bills over time. In Table C below, I show what the cumulative impact of spending is on the average annual residential heating customer bill at specific points in time, and also at the peak level of the program and in total over the lifetime of the AMRP both on a nominal dollar and present value basis.

Table C							
AMRP/SMP Bill Impact - Average Residential Heating Customer							
PGL As Calculated - Not Credible Scenarios							
	Year 2015	Year 2020	Year 2025	Year 2030	Peak Year	Program Lifetime	
						Total	PV
Base Case ¹	\$ 78.68	\$ 145.23	\$ 233.87	\$ 339.12	\$ 602.76	\$ 16,711	\$ 3,175
Base Case with 1.5% spending escalation ²	\$ 78.68	\$ 148.67	\$ 250.81	\$ 383.89	\$ 599.76	\$ 15,758	\$ 3,296
Base Case with 2.0% spending escalation ³	\$ 78.68	\$ 149.85	\$ 256.79	\$ 400.29	\$ 601.75	\$ 15,516	\$ 3,331
Base Case with 2.5% spending escalation ⁴	\$ 78.68	\$ 151.04	\$ 262.96	\$ 417.49	\$ 584.57	\$ 14,900	\$ 3,331
Base Case with 3.5% spending escalation ⁵	\$ 78.68	\$ 153.47	\$ 275.84	\$ 454.45	\$ 579.39	\$ 14,530	\$ 3,386
PGL 3-Year Plan Escalated @ 3% after 2020 - Most Likely Outcome							
3-Year Plan Case with 3.0% inflation escalation	\$ 78.68	\$ 202.66	\$ 350.24	\$ 498.56	\$ 785.05	\$ 22,247	\$ 4,305
Source: (1) PGL Ex. 5.4 WP01. (2) PGL AG 19.01 Attach 01, 02, 03, 04 WP and WP PGL AG 2.01 Attach 2. (3) AG WP1 with input from PGL Ex. 5.4 WP01 and PGL Ex. 5.3.							

As can be seen from the table, the average residential heating customer was already paying more than \$78 for the AMRP in 2015. Under the Company's Base Case, this cost

doubles by the year 2020 and increases gradually until reaching a peak amount of more than \$602 in the year 2040 which is the end of the construction phase of the program. However, the customer bill impact does not stop there, as there will still be billions of dollars of capital costs to depreciate from the rate base on which the Company will earn a return. The rate base costs for the AMRP will not be fully depreciated until the year 2073. Therefore, over the lifetime of the AMRP, including both the construction and cost recovery phases of the program, the average residential heating customer will pay \$16,711 for its share of the AMRP investment. On a present value basis discounted at the Company's overall cost of capital of 9.61%, those bill payments total to \$3,175 in today's dollars.

Each of the accelerated spending scenarios requested in the Commission's March 1st Order make the situation worse over the next 15 years and in present value terms for the average residential heating customer, with only a marginal reduction in the completion time of the program.

Q. WHAT IS THE MAJOR FLAW IN THE CALCULATIONS OF CUSTOMER BILL IMPACT NUMBERS SHOWN IN PGL EX. 5.4?

A. In the Base Case, as well as in the alternative spending scenarios, the Company used a level of capital expenditures for the 2016 to 2020 period that are considerably lower than the numbers that it has presented in the Three-Year Plan and recent reports for 2016 and 2017. The Base Case bill impact calculations show capital expenditures of \$132.3 million for 2016, \$144.4 million for 2017, \$152.9 million for 2018, \$161.9 million for

2019 and \$171.1 million for 2020. However, in the Company's testimony, exhibits, and response to data requests in this second phase of the case, the Company has reported that it has spent or projects to spend on the SMP/AMRP the following amounts: \$192 million, \$301.5 million, \$300 million, \$305 million, and \$304 million for each year 2016 to 2020, respectively. The latest numbers are nearly double the amounts that are included in the bill impact calculations in PGL Ex. 5.4. The bill impact calculations for the escalation scenarios are calculated based on the Base Case numbers. Therefore, the bill impact amounts in all scenarios are significantly flawed, not credible, and misleading.

It is also noteworthy to point out that the Company's bill impact projections shown on its Exhibit 5.4 are based on its total long-term program cost estimate of \$7.78 billion, which is derived³² from the November 30, 2015 cost model³³ filed by PGL in Docket No. 14-0496. That cost projection, prepared by Burns & McDonnell, depends crucially on certain "New Management Target Case" savings assumptions in six discrete cost categories, which were based on PGL's own estimates in 2015 of future savings.³⁴ PGL, however, now maintains that it is not even making an effort to track whether it is realizing any savings in the Burns & McDonnell cost savings categories.³⁵ Without

³² Tr. at 102:4-10; PGL Ex. 5.2 at 40, n. 23.

³³ ICC Docket No. 14-0496, PGL Program Level Cost Forecast and Schedule Model, November 30, 2015, at 9 (available at: <https://www.icc.illinois.gov/downloads/public/edocket/418210.pdf>); also entered in this proceeding as AG Cross Exhibit 5.

³⁴ PGL corrected response to data request AG 3.04(d), September 19, 2016, available at: <https://www.icc.illinois.gov/downloads/public/edocket/448416.pdf>.

³⁵ PGL Response in Opposition to the Illinois Attorney General's Motion to Compel Discovery Response, June 9, 2017, at 1-2 ("Peoples Gas simply does not have the information that the AG is seeking"), available at: <https://www.icc.illinois.gov/downloads/public/edocket/448384.pdf>.

those savings realized, the “Pre-Acquisition Path” long-term cost projection of \$10.96 billion becomes much more likely.

In the lower section of Table C, I have recalculated the bill impact amount at each point in time based on the higher capital spending numbers reported and forecasted by the Company in PGL Ex 5.3. From 2021 and after, I escalated the 2020 projected spending level at 3% to take in to consideration inflationary increases in labor and material costs. This analysis more accurately shows that in three years or 2020, the average residential heating customer will pay in excess of \$202 for SMP/AMRP if the Company’s proposed Three-Year Plan is implemented. That amount will continue to grow over the following years to reach \$785 at its peak point in 2040.

Q. HAVE YOU PERFORMED SIMILAR CALCULATIONS OF THE ALTERNATIVE SPENDING SCENARIOS FOR THE ATTORNEY GENERAL AMRP PROPOSAL PRESENTED IN PHASE 1?

A. Yes. I used the \$130 million capital budget program which was already escalated by 3% annually for inflationary cost increases and increase this further for the four spending escalation scenarios of 1.5% to 3.5%. Table D shows what the impact on the customer bill would be for the AG Base Case and each of the alternative scenarios.

658

Table D							
AMRP/SMP Bill Impact - Average Residential Heating Customer							
ICC Requested Scenarios of AG Proposal							
	Year 2015	Year 2020	Year 2025	Year 2030	Peak Year	Program Lifetime	
						Total	PV
AG Base Case-\$130 MM Escalated at 3% ¹	\$ 78.68	\$ 130.70	\$ 192.89	\$ 255.14	\$ 840.18	\$ 28,378	\$ 2,808
AG Base Case Escalated at 3% plus 1.5% ²	\$ 78.68	\$ 132.36	\$ 202.55	\$ 280.58	\$ 986.78	\$ 29,381	\$ 3,119
AG Base Case Escalated at 3% plus 2.0% ²	\$ 78.68	\$ 132.93	\$ 205.94	\$ 289.84	\$ 1,022.97	\$ 29,593	\$ 3,224
AG Base Case Escalated at 3% plus 2.5% ²	\$ 78.68	\$ 133.50	\$ 209.42	\$ 299.51	\$ 1,054.38	\$ 29,769	\$ 3,328
AG Base Case Escalated at 3% plus 3.5% ²	\$ 78.68	\$ 134.65	\$ 216.65	\$ 320.16	\$ 1,057.33	\$ 30,043	\$ 3,535
AG Alternative Proposal - \$157 Million Escalated 3%							
AG Alt Case-\$157 MM Escalated at 3% ³	\$ 78.68	\$ 143.94	\$ 218.27	\$ 292.68	\$ 632.31	\$ 19,328	\$ 2,997
Source:(1) AG Ex.2.9 calculates the AMRP bill impact of \$130 million spending budget escalated 3% annually to 2065 for cost inflation. (2) AG WP 1, 2, 3, 4, 5. Completion dates: 2056, 2054, 2052 and 2049, respectively (3) AG WP 6. \$157 million escalated at 3% with Completion Date in 2050.							

659

660 Again, the escalation in capital spending in each scenario has an increasing detrimental
661 impact on the customers' annual bill with only marginal reduction in the completion dates.

662 **Q. WHAT IS YOUR CONCLUSION ABOUT THE ALTERNATIVE CAPITAL**
663 **SPENDING SCENARIOS REQUESTED BY THE COMMISSION?**

664 **A.** In response to data request AG 19.02, the Company stated that it has no plans to implement
665 the various escalation scenarios that the Commission directed the Company to perform.
666 This response is included in AG Ex. 4.5. In my opinion, there is not much value in further
667 escalating the capital spending program. Instead, as proposed in my testimony both here

and in Phase 1, the Company's proposed Three-Year Plan needs to be scaled down to a more reasonable \$130 million level adjusted annually for future cost inflation.

THE TOTAL CUSTOMER BILL

Q. PLEASE DESCRIBE THE KEY ITEMS THAT MUST BE CONSIDERED WHEN DETERMINING THE COST IMPACT OF THE SMP/AMRP ON CUSTOMER BILLS.

A. As I stated in my testimony in Phase 1 and bears repeating again in this phase, the affordability of customer bills and specifically the impact on those bills of the costs of the SMP/AMRP cannot be presented in isolation. They must include all items that are likely to affect the total gas bill over the coming years. The following items provide some guiding principles:

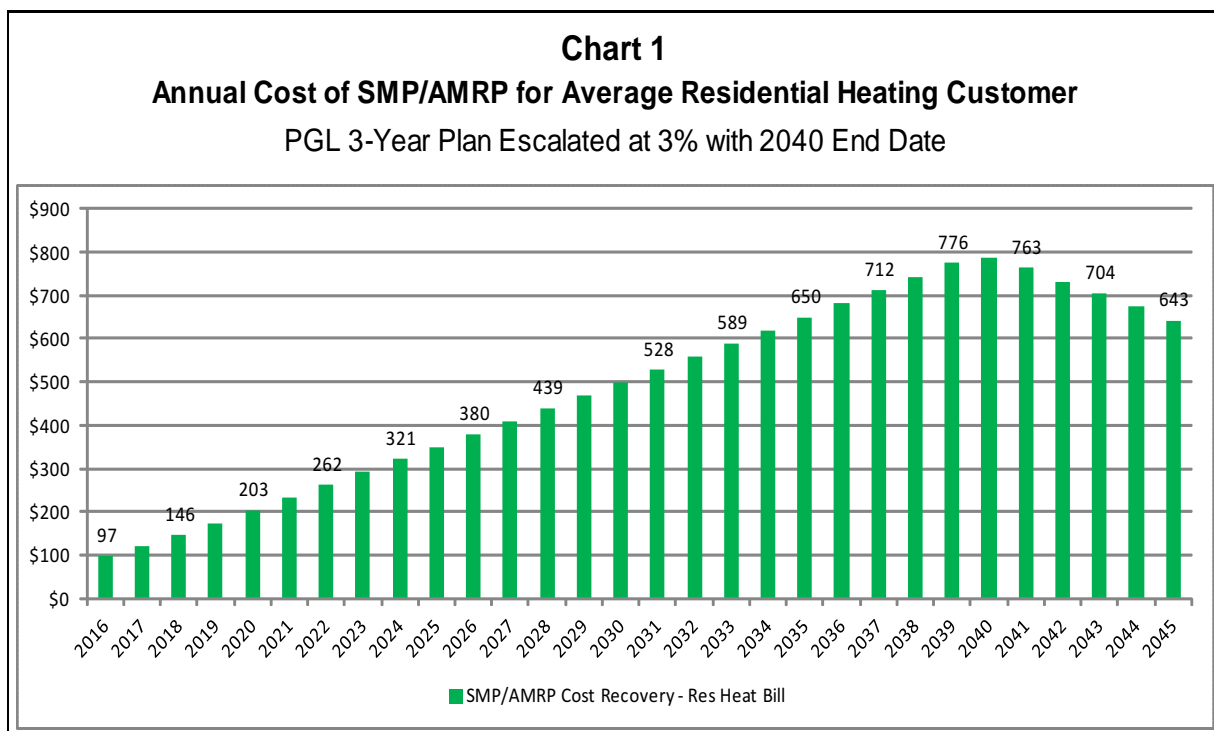
1. The calculation of the projected customer bill impacts must include all bill components: monthly customer charge, gas delivery charges, gas commodity charge, riders, surcharges and taxes. These bill components need to be forecasted for future years where possible.
2. The impact on customer bills needs to be shown over time. The AMRP is not a short-term program; it spans multiple decades, and the cost impact accumulates over time.
3. Peoples Gas's simple average annual percent cost increase over a long timeframe is misleading. It misrepresents the cumulative impact on customers' bills and customers' ability to pay for the program.
4. PGL has a large number of low-income customers. The inability of those customers to pay significant increases in gas bills given their poverty-level

691 or near-poverty level incomes and stagnant wage growth must be seriously
692 considered in establishing a reasonable level of annual capital
693 expenditures and a target completion end date for the AMRP.

694 **Q. WHAT LEVELS COULD THE TOTAL BILL FOR THE AVERAGE**
695 **RESIDENTIAL HEATING CUSTOMER REACH IN THE COMING YEAR IF THE**
696 **COMPANY'S PROJECTED CAPITAL SPENDING IN ITS THREE-YEAR PLAN**
697 **CONTINUES TO COMPLETION?**

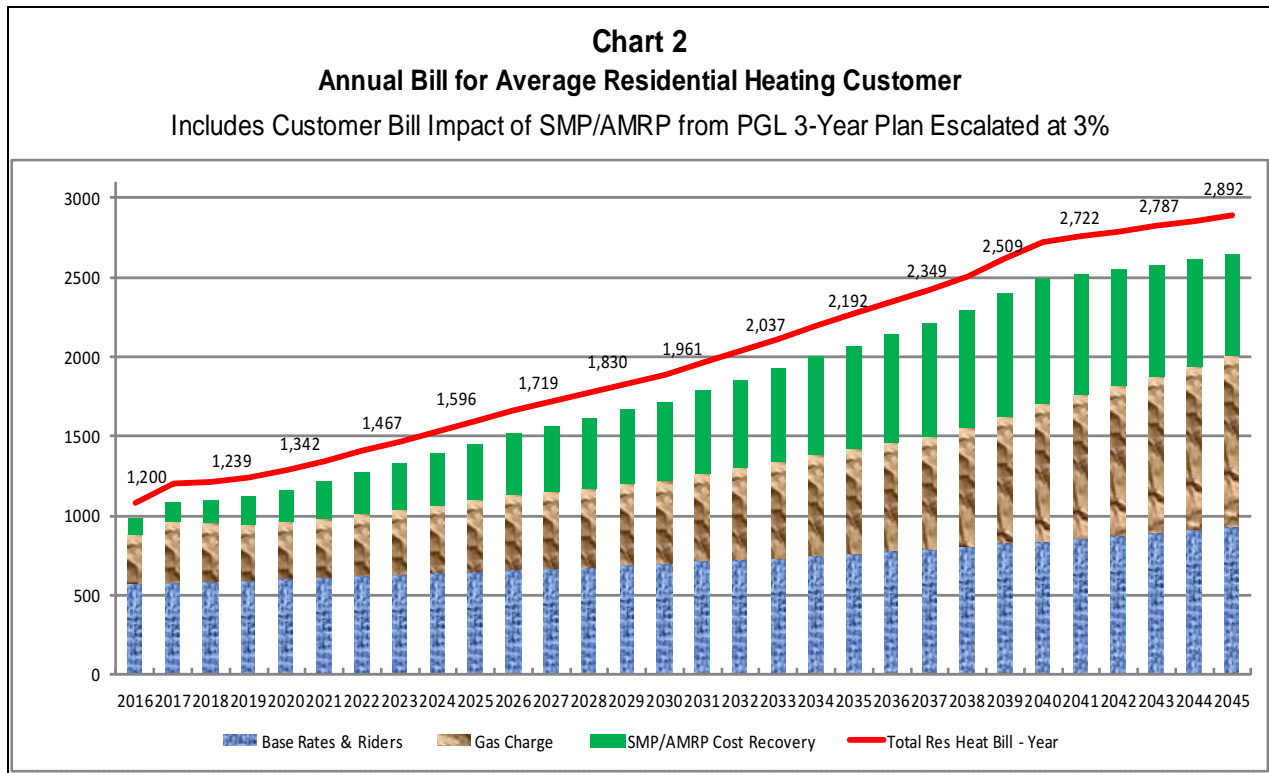
698 A. As stated earlier, I modified the Company's SMP/AMRP bill impact calculation model to
699 match the projected capital spending in PGL Ex. 5.3 and the actual amount spent in 2016.
700 For 2021 and future years, I increased the 2020 capital spending level of \$304 million at a
701 rate of 3% annually to take into consideration inflationary increases in labor and material
702 costs.

703 Chart 1 below shows the impact that the Company's spending on the SMP/AMRP will
704 have on the average residential heating customer's bill each year from 2016 to 2045.



When adding these amounts to the monthly charge and base distribution costs (excluding the AMRP cost to avoid double counting), the various riders and surcharges billed by PGL (excluding Rider QIP), the gas commodity charge, and city/state taxes, the total bill to the average residential heating customer will double in 15 years from approximately \$1,000 in 2016 to almost \$2,900 in 2045.. Chart 2 shows this graphically with all the major bill components identified.³⁶

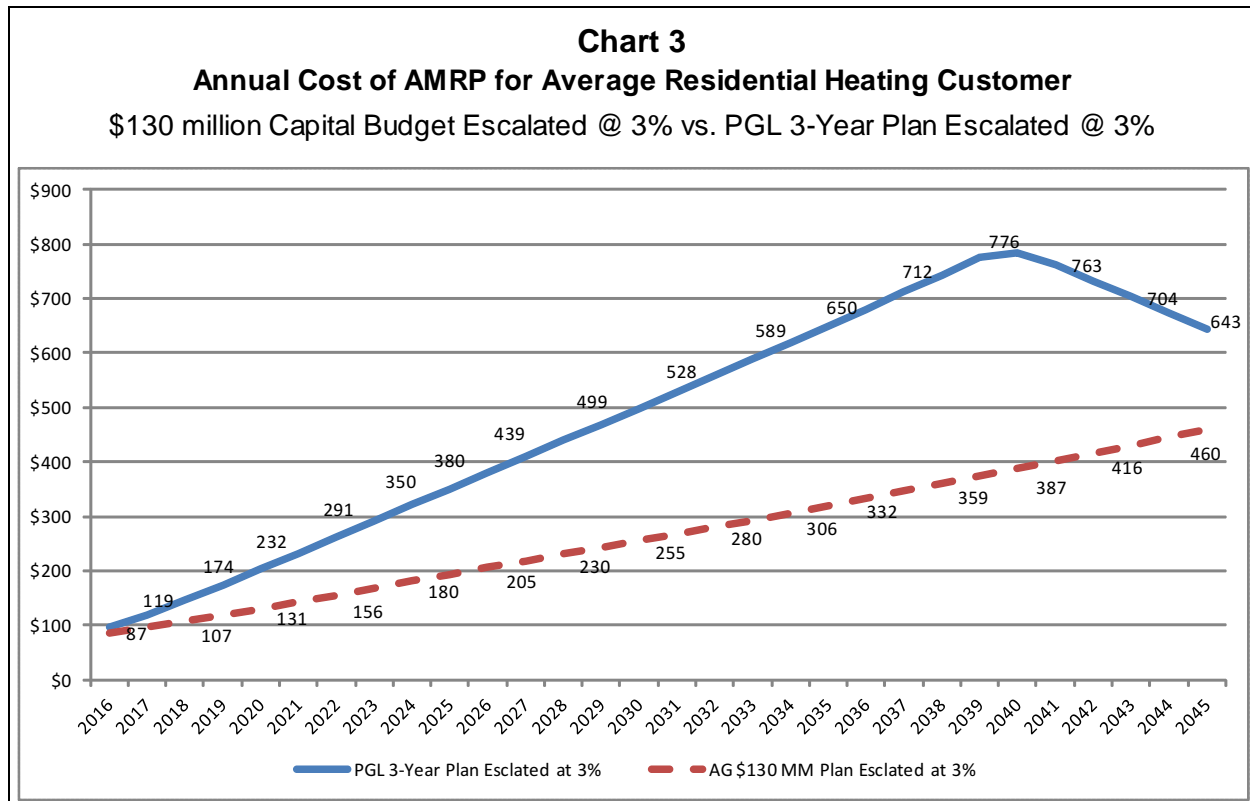
³⁶ City and State sales taxes are not separately identified but are included in the Total Bill line.



AG Exhibit 4.6 shows the assumptions used in calculating the various components of the total bill including the AMRP.

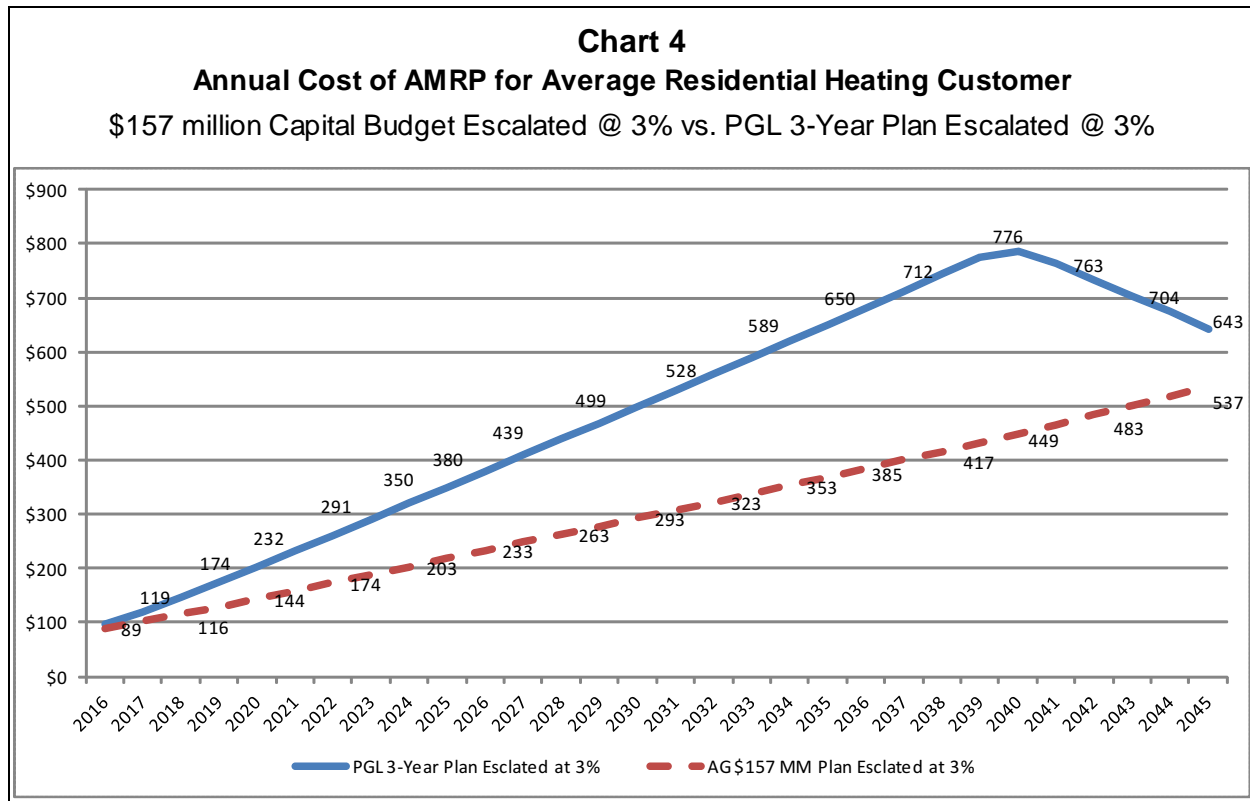
Q. HOW DOES THIS ANNUAL BILL IMPACT COMPARE TO THE BILL IMPACT OF THE \$130 MILLION CAPITAL SPENDING LEVEL WITH ANNUAL ESCALATION THAT YOU HAVE PROPOSED?

A. Chart 3 below gives a visual representation of the bill impact of the Company's Three-Year plan, as previously discussed above, with the bill impact of the \$130 million capital spending program I have proposed for the AMRP.



As is evident from the chart, there is a considerable amount of relief on the customer annual bill if the lower capital spending of \$130 million escalated at 3% is adopted.

Similarly, Chart 4 below shows how the customer bill impact compares with PGL's Three-Year Plan escalated to completion if the Commission were to adopt a capital budget of \$157 million escalated at 3% annually to take into consideration either a higher level of CI/DI main and service line replacements or other infrastructure needs for High Pressure and Transmission facilities.



The \$157 million capital spending program would still provide a significant amount of bill impact relief to the average residential heating customer, albeit not as much as the lower \$130 million program.

When considering either the \$130 million or \$157 million capital spending program for SMP/AMRP, the Commission should be aware that in the calculation of the Total Bill presented in Chart 2, I have included a 3.5% annual increase in delivery base rates to take into consideration increases in rate base from other capital expenditures outside of the AMRP and also to include other operating cost increases. As such, High Pressure and Transmission facilities upgrades and other capital spending, not included in the AMRP, are reflected in the base rate bill increases shown in the chart.

PROGRAM PERFORMANCE METRICS

**Q. DO YOU AGREE WITH THE LIST OF PERFORMANCE METRICS
PROPOSED BY MR. HESSELBACH?**

A. No. The metrics proposed by the Company monitor primarily the cost and quantity of work performed for the AMRP each year, but do not monitor the cost-effectiveness of the program. They also do not provide the Commission, Staff and other parties to this proceeding with pertinent information on what neighborhoods were completed, what neighborhoods remain to be completed, how the risk profile of the neighborhoods has changed from year-to-year or bi-annually when a re-evaluation of risky pipe segments is performed, and how many miles of vulnerable mains, services and meters remain to be completed at the end of each year. There is also no means within the Company's proposed metrics for the Company to communicate to the Commission why and how it decided to select the proposed neighborhoods or segments to replace for the rolling Three-Year Plan.

In this regard, I will repeat from my testimony in Phase 1 the additional metrics and information that the Company should provide to the Commission, Staff and other parties to this proceeding either on a quarterly or annual basis, as appropriate.

1. Restoration cost-per-mile and percent improvement from the 2015 baseline;³⁷

³⁷ The Company's Month-End Reports filed for each month of 2016 in this proceeding show how actual per-unit costs compared to planned costs, but shed no light on how those planned per-unit costs were estimated. The AG has issued a data request, AG 25.01, asking for insight on exactly how per-unit costs are budgeted; a response is

2. SI and PI projects completed, number of miles of main, services, and meters installed and retired with related capital expenditures;
3. A list of segments and services replaced with an UMRI ranking of 5 or greater under the System Improvement Program;
4. Percent improvement in Contract Labor Efficiency from the 2015 baseline;
5. Percent improvement in Installation Efficiency from the 2015 baseline;
6. Percent improvement in Project Management Efficiency from the 2015 baseline;
7. Adequacy of cost contingency factors from the 2015 baseline;
8. Percent decline in annual O&M expense for mains & services to show cost savings from replacing old high maintenance mains and services with new pipe;
9. Percent decline in lost and unaccounted for gas on a rolling three-year cycle to show that the new pipe and fewer leaks are creating cost savings;
10. The neighborhoods completed during the past year or the main segments replaced and the forecasted neighborhoods or segments for the coming three-year plan with related quantities and cost projections; and
11. A list of remaining neighborhoods to be completed with related miles of pipe, services, and meters to be replaced, along with the respective UMRI, and other factor rankings, and the projected timeline and cost to complete remaining neighborhoods.

These reports and information should be provided either on a quarterly or annual basis, or

expected in late June, after the filing date of this testimony. I reserve the right to comment on the Company's response at a later time.

at least 60 days before the beginning of each annual QIP Rider cycle.

**Q. DO YOU SUPPORT THE EARNED VALUE METRIC PROPOSED BY STAFF
AND OTHER METRICS PROPOSED BY THE CITY?**

A. Yes. Although the Company may find it difficult to gather and track the information needed to develop the Earned Value metric, it is worth calculating and monitoring this metric at least on a provisional basis for a couple of years, after which a determination can be made if it useful to continue it. The City's list of metrics from Phase 1 of this case would also be useful to monitor the effectiveness of the permitting and restoration work, as well as other coordinating activities between the Company and the City.³⁸

**Q. DO YOU SUPPORT THE DEVELOPMENT OF A RISK INDEX TO MONITOR
THE CHANGE IN RISK PROFILE OF THE COMPANY'S VULNERABLE
PIPES?**

A. Yes. The Company has readily dismissed the development of a risk index by stating that there is no known industry accepted index to determine and track pipe risk levels.³⁹ The fact that no such index readily exist does not mean that one could not be developed. The Company periodically makes a determination of what at-risk segments of pipe it needs to retire through the System Improvement program and through the Neighborhood Program. This implies that the Company has at least a reasonable basis to determine what pipe

³⁸ See City-CUB Ex. 1.6.

³⁹ PGL response to data request AG 23.08(b).

800 segments are riskier than others. In fact, the UMRI index and some of other factors that
801 go into prioritizing and selecting the neighborhoods to be addressed first quantify risk.

802 The Company should be able to use and aggregate these risk factors and develop an
803 overall risk index which can be monitored from year-to-year. In selecting the
804 neighborhoods to be addressed in PGL's proposed Three-Year Plan, the Company should
805 clearly show that by completing those neighborhoods, the overall risk index would
806 decline. As the vulnerable pipe segments are re-evaluated each year, then the overall risk
807 index should be declining, assuming the Company is properly focusing on the worst
808 neighborhoods. If there is not a decline in the risk index over time, then the Company's
809 execution of the AMRP is not effective. To this end, my opinions should be viewed as
810 complementary to those of AG witness Allen R. Neale on the same topic.⁴⁰

811 **RECOMMENDATIONS**

812 **Q. HOW CAN THE COMMISSION ENSURE THAT THE AMRP PROCEEDS ON A**
813 **PACE THAT REPLACES RISKY CI/DI PIPES WITHIN A REASONABLE TIME**
814 **FRAME AND MINIMIZES THE DETRIMENTAL BILL IMPACT TO**
815 **CUSTOMERS IN COMING YEARS?**

816 **A.** The Commission should reject PGL's proposed Three-Year Plan to spend in excess of
817 \$300 million annually and expand the scope of the AMRP into a broader SMP. Such a
818 capital expenditure level will continue to escalate in future years and will impose an
819 unacceptable financial burden on PGL customers. Simply put, and as discussed at length

⁴⁰ See AG Exhibits 1.0R, 3.0.

820 by AG witness Roger D. Colton,⁴¹ large numbers of residential customers will likely be
821 unable to afford the high and escalating bills resulting from PGL's proposed SMP capital
822 program.

823 To continue on the course that PGL has proposed will have a devastating effect on
824 residential customers and will likely significantly increase uncollectible accounts expense
825 as more and more customers will find that they are unable to pay ever-higher and higher
826 gas bills. This, in turn, will increase rates and bills for paying customers, thus creating a
827 negative spiral of bill affordability.

828 The Commission should also reject any capital spending escalation. Both the Company
829 and the Attorney General do not see any value in further escalating spending. On the
830 contrary, annual capital spending should be decreased.

831 As I have discussed above, there is a reasonable pace at which the Company can replace
832 the most vulnerable pipe segments by 2050 and the remaining CI/DI pipes by 2065 or
833 earlier. This is in line with the recommendations of previous engineering studies and the
834 main replacement programs of most of the Company's industry peers. My testimony
835 shows that a capital expenditures program beginning at \$130 million or a maximum \$157
836 million and escalating at an annual rate of 3% would timely and effectively remove
837 remaining risky pipes and make the AMRP more affordable for customers.

838 Without a lower capital spending goal and a redefined scope and moderated pace of the
839 program, all indications are that PGL will continue to increase capital expenditures in

⁴¹ See AG Exhibits 5.0 *et seq.*

840 future years to a level that will make gas bills unaffordable for a substantial segment of
841 residential customers.

842 Q. **DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

843 A. Yes. However, I reserve the right to amend, revise or supplement my testimony to
844 incorporate new information that may subsequently become available.